**2nd Quarter Cumulative Assessment**

1. The Taylor series for a function about is given by and converges to for all real numbers . If the fourth-degree Taylor polynomial for about is used to approximate , which of the following given the alternating series error bound?

(A)

(B)

(C)

(D)

(A)

(B)

(C)

(D)

1. Which of the following series are *conditionally* convergent?

i.

ii.

iii.

(A) I only

(B) I and II only

(C) I and III only

(D) II and III only

1. Which of the following series converge?

I.

II.

III.

(A) I only

(B) II only

(C) III only

(D) I and II only

(E) I and III only

1. What are all values of for which the series diverges?

(A)

(B) only

(C)

(D) only

(E) The series diverges for all .

1. Which of the following definite integrals has the same value as ?

(A)

(B)

(C)

(D)

(E)

1. is

(A)

(B)

(C)

(D) 1

(E) divergent

1. The third-degree Taylor polynomial for a function about is . What is the value of ?

(A)

(B)

(C)

(D)

(E)

(A)

(B)

(C)

(D)

(A)

(B)

(C)

(D)

(E)

1. Which of the following is the interval of convergence for the series ?

(A)

(B)

(C)

(D)

1. Which of the following is the Maclaurin series for ?

(A)

(B)

(C)

(D)

(E)

1. A curve is defined by the parametric equations and . What is in terms of ?

(A)

(B)

(C)

(D)

14.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| 0 | 2 | -1 | 3 | 5 |
| 2 | 3 | -2 | 7 | -1 |

The table above gives values of a function and its derivatives at selected values of . Which of the following is the third-degree Taylor polynomial for about ?

(A)

(B)

(C)

(D)

1. What is the sum of the series ? (Remember, )

(A)

(B)

(C)

(D) The series diverges.

1. A curve is defined by the parametric equations and . Which of the following is an equation of the line tangent to the graph of at the point where ?

(A)

(B)

(C)

(D)

(E)

1. The vector-valued function is defined by . Which of the following is ?

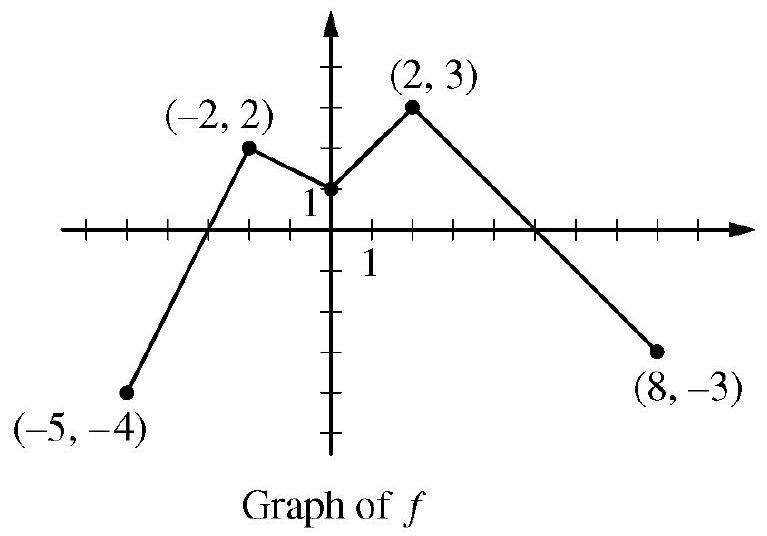
(A)

(B) 2

(C)

(D)

18.



The continuous function is defined on the interval . The graph of , which consists of four line segments, is shown in the figure above. Let be the function given by .

(a) Find and .

(b) Find in terms of . For each of and , find the value or state that it does not exist.

(c) On what intervals, if any, is the graph of concave down? Give a reason for your answer.

(d) The function is given by . Find . Show the work that leads to your answer.